

Dentigerous Cyst in a Pediatric Patient — A Case Report

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Abstract

Dentigerous cysts are developmental odontogenic lesions that frequently occur in the retromolar region of the mandible. This paper describes the clinical case of a 9-year-old pediatric patient who presented with an enlarged left mandibular region. The diagnosis was made by clinical examination and panoramic radiograph, which revealed a radiolucent lesion associated with the mandibular left second molar. Treatment consisted of surgical excision of the affected molars, cavity cleaning, and application of platelet-rich fibrin. The postoperative course was favorable, with no signs of recurrence or complications. The study highlights the importance of early diagnosis and the use of biomaterials such as platelet-rich fibrin to optimize bone healing.

Keywords: *Dentigerous Cyst; Pediatric Patient; Salivary Glands; Case Report*

Introduction

The origin of maxillary cysts is related to embryonic odontogenic epithelia. When they are immersed in a reactive stroma, they can reactivate, and their cells begin to grow, develop, and differentiate (1).

A cyst is a pathological cavity developed within a tissue, surrounded by an epithelial wall unrelated to its contents, which can be liquid or semi-liquid (2).

This can be excreted by cells lining the cavity or coming from tissue fluid. It can be clear or cloudy, fluid or watery, thick or creamy, and may contain cholesterol crystals (3).

True cysts, pseudocysts, or cystic tumors can be observed in the jaws (2). Larger ones can bulge the cortical walls but do not rupture them; therefore, the bone borders are usually intact. They are more common in the jaws than in any other bone because most of them form from the numerous remnants of the odontogenic epithelium left behind after tooth formation. Radiographs show areas of radiolucency, often with a hyperostotic border. Based on their pathogenesis, odontogenic cysts can be classified as developmental or inflammatory lesions (3).

The dentigerous cyst is the most common type of developmental odontogenic cyst and is the second most common after the radicular cyst (4).

It has an incidence of 20% of all odontogenic cysts and is most commonly located in the retromolar region of the mandible and in the canine region of the maxilla (2).

Radiographically, it is characterized as a unilocular radiolucent lesion with well-defined sclerotic borders, associated with the crown of the tooth. Cortical expansion and root resorption are frequently found (5).

It is a lesion that is seemingly easy to diagnose but can have complications relative to its malignancy. If not treated promptly, it can progress to much more aggressive entities such as ameloblastoma, keratocyst, or adenomatoid odontogenic tumor. Treatment becomes much more complicated and aggressive, often causing mutilation of significant bone structures (3).

Panoramic radiography as an aid in diagnosis is essential for early detection due to its broad anatomical coverage. It allows these lesions to be identified in their early stages, usually incidentally during routine examinations.

The diagnosis of a dentigerous cyst is made through a thorough clinical and radiographic examination, as well as histopathological analysis. Histologically, a dentigerous cyst presents a capsule of loosely attached fibrous connective tissue, generally lined by epithelium, generally of the non-keratinized stratified squamous type. Hyperplastic squamous epithelium and reduced enamel epithelium may also line the lesion. The capsule may show a mononuclear inflammatory infiltrate and small islands or cords of odontogenic epithelium remnants.

They can be treated with various surgical procedures, ranging from direct surgical extraction to treatments involving marsupialization, which includes various devices followed by enucleation. These procedures are performed to remove the cyst, preventing recurrence. There are some cases in which reconstructive surgery is recommended to correct the aesthetic and functional defects caused by the cyst. Marsupialization is a conservative procedure that involves establishing communication between the internal environment of the cyst and the oral cavity. This procedure allows for the balance of intralesional hydrostatic pressure and, consequently, decompression and reduction of the cyst, which allows for the formation of new bone tissue and reduces the risk of large bone defects and paresthesia. This procedure is the best choice for the treatment of dentigerous cysts in children, because this treatment modality is considered a conservative option, which in addition to preserving important structures, favors the eruption of the dental elements in formation or their orthodontic traction (6).

Case Presentation

We present the case of a 9-year-old male patient. He was brought to the clinic by his mother due to swelling in the left mandibular region, which gradually increased in size over a short period of time.

Clinical Manifestations

Extra-orally, there was evidence of swelling in the left mandibular region, extending from the body of the mandible to the mandibular angle on the same side.

Intraorally, there was also swelling in the molar region on that side, with effacement of the sulcus due to growth of the buccal plate. The mandibular left first molar (36) was also present, while the mandibular left second and third molars (37 and 38) were clinically absent.

Complementary Exams

Blood

Hemoglobin: 158 g/L Leukocytes: $8.8 \times 10^9/L$

Hematocrit: 50% Segmented: 072

Blood group and Rh factor: O+ Eosinophils: 007

Coagulation T: 8min Monocytes: 000

Lymphocytes: 032 Platelet count: $316 \times 10^9/L$

X-rays

Panoramic radiograph was indicated, revealing a radiolucent area with a tooth-like radiopaque area inside, consistent with the lower second molar on the left side, and also related to the distal root of the lower first molar on the affected side. (Fig. 1)



Fig 1. Panoramic view showing the radiolucent area surrounding the crown of 37.

Management and Treatment

After evaluating the patient through a physical examination, complementary blood chemistry studies, and X-rays, and after consultation with the relevant specialists, it was decided to perform surgery under general anesthesia and assisted with ventilation. Surgical excision of the mandibular left first molar was performed, as was the mandibular second molar, as well as the involved molar. The extracted sample was sent to the pathology department for histological analysis. The cavity was thoroughly cleaned and rinsed. After curettage of the bone cavity, a platelet-rich fibrin concentrate was applied to stimulate bone growth. Tissue synthesis was achieved with 3/0 silk, which was removed after 10 days. The postoperative course was satisfactory; there was no excessive inflammation or dehiscence of the surgical wound.

One month after surgery, a panoramic X-ray was taken, which showed no evidence of compromised bone integrity. (Fig. 2)



Fig 2. Panoramic view of the evolution one month after surgery, showing good recovery and no recurrence of the lesion.

Discussion

Numerous authors suggest that a large proportion of maxillary cysts are diagnosed incidentally, even when they have not produced symptoms, and that this is closely related to the different stages of development the patient goes through. The study showed a similar pattern: when the patient sought specialized medical attention, he only reported an increase in volume in the left half of his face, which corresponds to the subclinical period, in which no symptoms were observed; its presence can only be detected through an x-ray. In our case, an orthopantomography, commonly called a panoramic view, was performed, which is accessible and provides a complete view of both jaws and their adjacent structures.

Several authors agree that the treatment of dentigerous cysts depends on the size, location, and configuration of the lesion. They report that small unilocular lesions are removed through osteotomy, extraction of the impacted tooth, and removal of the lesion, a procedure consistent with our study. Furthermore, treatment with platelet-rich fibrin contributed to a better outcome, as it is widely used to accelerate the healing of soft and hard tissues. Leukocytes appear to strongly influence the release of growth factors, immune regulation, anti-infective activities, and matrix remodeling during healing. The main advantage is that the patient's blood is used, which reduces potential immune rejection reactions and parenteral transmission of diseases. This treatment optimizes cell behavior due to the increased cellular content and growth factor accumulation (7).

The postoperative outcome was satisfactory; there was no excessive inflammation or dehiscence of the surgical wound.

Conclusions

This clinical case demonstrates the importance of early diagnosis and a comprehensive approach in the treatment of dentigerous cysts in pediatric patients. Although these lesions are usually asymptomatic in their early stages, their incidental detection through radiographic studies allows for timely intervention that prevents future complications. In this case, the combination of surgical excision with the application of platelet-rich fibrin was effective in promoting bone regeneration and a satisfactory postoperative outcome, with no signs of recurrence or functional or aesthetic compromise. The value of conservative approaches in pediatric dentistry is also highlighted, as they not only allow for the treatment of the disease but also maximize the preservation of developing anatomical structures and minimize the impact on the patient's quality of life.

Conflicts of Interest

The authors declare no conflicts of interest.

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